



Albuquerque Environmental Health Department Air Quality Program 2021 Annual Network Review

May 1, 2021

Summary

Federal regulations require state and local agencies that conduct ambient air monitoring for regulatory purposes to submit an Annual Network Review (ANR) to the U.S. Environmental Protection Agency (EPA). ANRs provide detailed information to the public about the monitoring locations and instruments operating in the agency's ambient air monitoring network. The City of Albuquerque Environmental Health Department Air Quality Program (AQP) conducts ambient air monitoring for regulatory purposes. AQP has prepared this ANR to meet the federal regulatory requirements outlined at 40 CFR 58.10 and Appendices A through E.

The 2020 ANR details the operations of AQP's monitoring network in Calendar Year 2020 and describes the changes that AQP plans over the next 12 months. This ANR includes detailed information about air quality monitors using Federal Reference Methods (FRM), Federal Equivalent Methods (FEM), National (NCore) Multipollutant monitoring stations, and Chemical Speciation Network (CSN).

This ANR will be available on May 1, 2021 for a 30-day public inspection and comment period prior to AQP's submittal to the U.S. EPA. If public comments are received, the AQP will provide a response to the comments when the plan is submitted to the U.S. EPA. The final version will be available for download at <http://www.cabq.gov/airquality/air-quality-monitoring/annual-network-review-for-ambient-air-monitoring>.

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Table of Definitions

Pollutant – indicates the pollutant, or set of pollutants, measured by each monitor

AQI- Air Quality Index. The higher the AQI value, the greater the level of air pollution and health concern. An AQI value of 50 or below represents good air quality, an AQI value of 51 to 100 represent moderate air quality, while an AQI value over 300 represents hazardous air quality. More information about the AQI can be found at <https://www.airnow.gov/aqi/aqi-basics/>.

- CO- carbon monoxide
- Chemical Speciation Network (CSN) – a monitor that measures different kinds of carbon species such as black, brown, or organic carbon. The quantities of these different species can tell air quality scientists more about the sources contributing to particulate matter (PM) 2.5. The CSN program developed the speciation monitor and suite of lab analysis procedures to identify and quantify the chemical components of PM2.5
- NO₂ – nitrogen dioxide
- NO- nitrogen oxide
- NO_y – reactive nitrogen; NO and its oxidation products; a common definition is NO_y = NO + NO₂ + HNO₃ + NO₃ (aerosol) + NO₃ (radical) + N₂O₅ + PAN (peroxyacyl nitrates) + other organic nitrates
- Ozone – an unstable molecule consisting of three oxygen atoms
- PM₁₀ – particles with a diameter of 10 micrometers or less
- PM_{2.5} – particles with a diameter of 2.5 micrometers or less, also known as “fine particles”
- SO₂ – sulfur dioxide

Monitor Type – This indicates how the monitor is classified in EPA’s Air Quality Subsystem (AQS)

- NCore – monitor operated at a site, which has been accepted into EPA’s national network of long-term multi-pollutant sites.
- SLAMS – State and Local Air Monitoring Stations. SLAMS make up the ambient air quality monitoring sites primarily needed for NAAQS comparisons, but may serve other data purposes. SLAMS exclude special purpose monitor (SPM) stations and include NCore, and all other State- or locally-operated stations that have not been designated as SPM stations.

Sampling Method – Indicates how the sample is collected.

- CSN Sampler – a speciation monitors to identify and quantify the chemical components of PM2.5 via CSN protocol.
- Gas Filter Correlation – determines the concentration of CO using a method based on Beer-Lambert law, that relates the absorption of light to the properties of the material through which the light is traveling over a defined distance. In this case, the light is infrared radiation traveling through a sample chamber filled with gas bearing a varying concentration of CO.
- Gas Phase Chemiluminescence – when a NO molecule collides with an ozone molecule, nitrogen (NO₂) molecule and an oxygen (O₂) molecule result. The NO₂ molecule is in an excited state, and subsequently emits infrared light that is detected by a photomultiplier tube.
- Gravimetric – a filter is weighed before and after collecting a particulate sample to quantify the amount of particulate in a volume of ambient air.
- Ultraviolet Absorption – ozone absorbs ultraviolet light; this property is the basis for the analytical method used by continuous ozone monitors to measure ozone concentrations.

- **Ultraviolet Fluorescence** – when excited by ultraviolet light, SO₂ molecules emit light at a lower frequency that is detected by a photomultiplier tube. This property is the basis for the analytical method used for continuous SO₂ gas analyzers.

Operating Schedule – Continuous monitors run all the time and measure hourly average concentrations in real time. Manual samplers, such as PM filter samplers, collect a single 24-hour sample from midnight to midnight on a particular day, which is weighed later in an analytical laboratory. A fractional (e.g. 1/1, 1/2, 1/3, 1/6 and 1/12) schedule for manual samplers refers to collecting a sample every day, every second, as well as every third, every sixth and every twelfth day, respectively.

Primary Monitoring Objective – the primary reason a monitor is operated at a particular location

- **General Background** – The objective is to establish the background levels of a pollutant
- **Higher Concentration** – The objective is to establish the maximum ozone concentration. Since ozone is a secondary pollutant, ozone concentrations are typically highest 10-30 miles downwind of an urban area.
- **Population Exposure** – The objective is to monitor the exposure of individuals in the area represented by the monitor
- **Regional Transport** – The objective is to assess the extent to which pollutants are transported between two regions that are separated by hundreds of kilometers
- **Source Oriented** – The objective is to determine the impact of a nearby source

Spatial Scale – The scale of representativeness is described in terms of the physical dimensions of the air parcel nearest to a monitoring site throughout which actual pollutant concentrations are reasonably similar. Monitors are classified according to the largest applicable scale as illustrated below:

- **Neighborhood Scale** – defines concentrations within some extended area of the city or county that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range. The neighborhood and urban scale (listed below) have the potential to overlap in applications that concern secondarily formed or homogeneously distributed air pollutants.
- **Urban Scale** – defines concentrations within an area of city-like dimensions, on the order of 4 to 50 kilometers. Within a city, the geographic placement of sources may result in there being no single site that can be said to represent air quality on an urban scale.
- **Regional Scale** – usually defines a rural area of reasonably homogenous geography without large sources, and extends from tens to hundreds of kilometers.

NAAQS Comparable – This details whether the data from the monitor can be compared to the National Ambient Air Quality Standards (NAAQS). Entries in this column for Tables 1-6 are Yes and No. For a monitor's data to be eligible for comparison against the NAAQS, the type of monitor used must be defined as a federal reference method or federal equivalent method by EPA.

MSA – Metropolitan Statistical Area – one urbanized area with a population of 50,000 or more.

Changes – Lists any changes that AQP anticipates making to the network for each specific analyzer/sampler.

Albuquerque Environmental Health Department (EHD)
Air Quality Program (AQP)
Ambient Air Monitoring Division
2021 Annual Network Review for Ambient Air Monitoring

Introduction:

The Albuquerque-Bernalillo County Joint Air Quality Program (AQP), administered by the City of Albuquerque's Environmental Health Department, is authorized to implement and enforce clean air laws within the boundaries of the City of Albuquerque and Bernalillo County.

Federal regulations require the Albuquerque-Bernalillo County Joint AQP to submit an annual monitoring network review (ANR) to the Environmental Protection Agency (EPA) regional office in Dallas, Texas. AQP's objective, when reviewing its network and proposing changes (if appropriate), is to use its limited monitoring resources optimally, while maximizing the network's effectiveness by choosing monitoring sites to measure where air quality is likely to be most heavily impacted by certain criteria pollutants.

This network plan describes the framework of AQP's local air quality surveillance system, presents monitoring results over the past three years, provides comparisons to National Ambient Air Quality Standards (NAAQS), and discusses AQP's plans for changes to the network in the coming year. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to formal submission to EPA (Anticipated public review dates are May 1 – May 31, 2021). All City of Albuquerque State and Local Air Monitoring Stations (SLAMS) are operated in compliance with meet EPA guidance under 40 CFR, Part 58, Appendix E.

This document shows the network configuration since the 2020 ANR and proposed changes for the 2021 calendar year. It represents the commitment of the AQP to effectively evaluate air quality in Albuquerque-Bernalillo County¹ through ambient air monitoring, by using the best affordable technology and by communicating the data collected as quickly and accurately as possible.

The AQP operates its air monitoring network in accordance with the quality assurance requirements of 40 CFR Part 58, Appendix A and B, makes use of the methodology given for each monitor in accordance with Appendix C, implements and designs its monitoring network in accordance with Appendix D, and follows siting criteria provided in Appendix E.

Population Statistics:

The Counties of Bernalillo, Sandoval, Valencia, and Tarrant make up New Mexico's largest metropolitan statistical area (MSA). The MSA contains 918,018 people as of 2019 which is almost half (43.7%) of the State's total population of 2,096,829.² AQP is using 2019 data for this ANR, as the U.S. Census Bureau population estimates have not been updated for 2020.

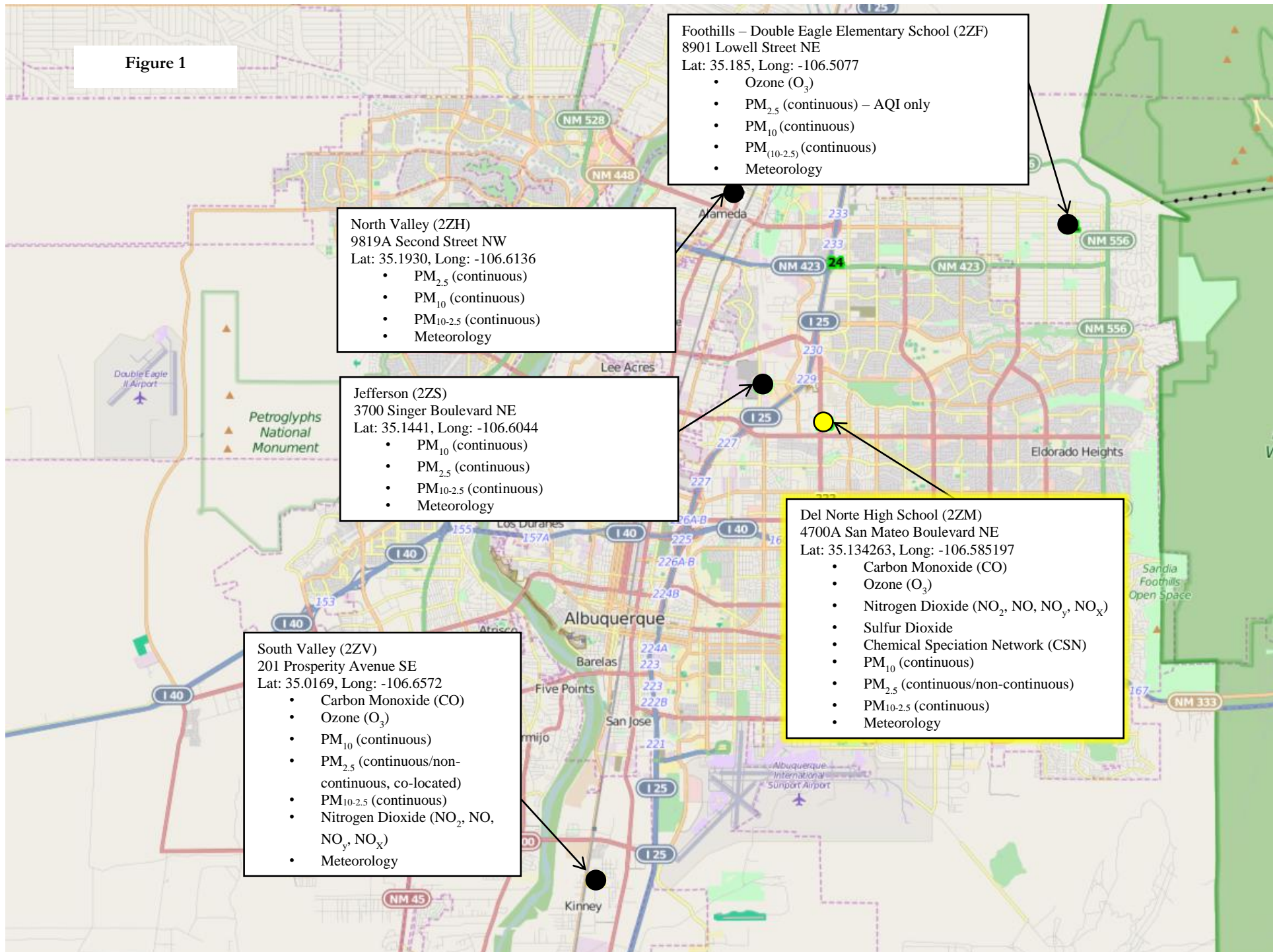
As the regional center for employment, higher education, retail commerce, and medical treatment, Albuquerque-Bernalillo County experiences non-local commuter traffic. The junction of major Interstate 25 (north/south) and Interstate 40 (east/west), adds significant heavy transport traffic between the Ports of Los Angeles & Long Beach and the East Coast, and between Denver, El Paso, and the US-Mexico border.

The map in Figure 1 shows the physical location of all current monitoring sites operated by the AQP. Two sites are within the City limits of Albuquerque (2ZM – Del Norte, 2ZS – Jefferson). Three sites (2ZV – South Valley, 2ZH – North Valley, and 2ZF – Foothills) are located in Bernalillo County.

¹ Excluding Native American and Pueblo Lands within the County, in which air quality is under the jurisdiction of either EPA or the Native American tribe or Pueblo itself.

² Data from U.S. Census Bureau's 2019 population estimates for MSAs/CBSAs

Figure 1



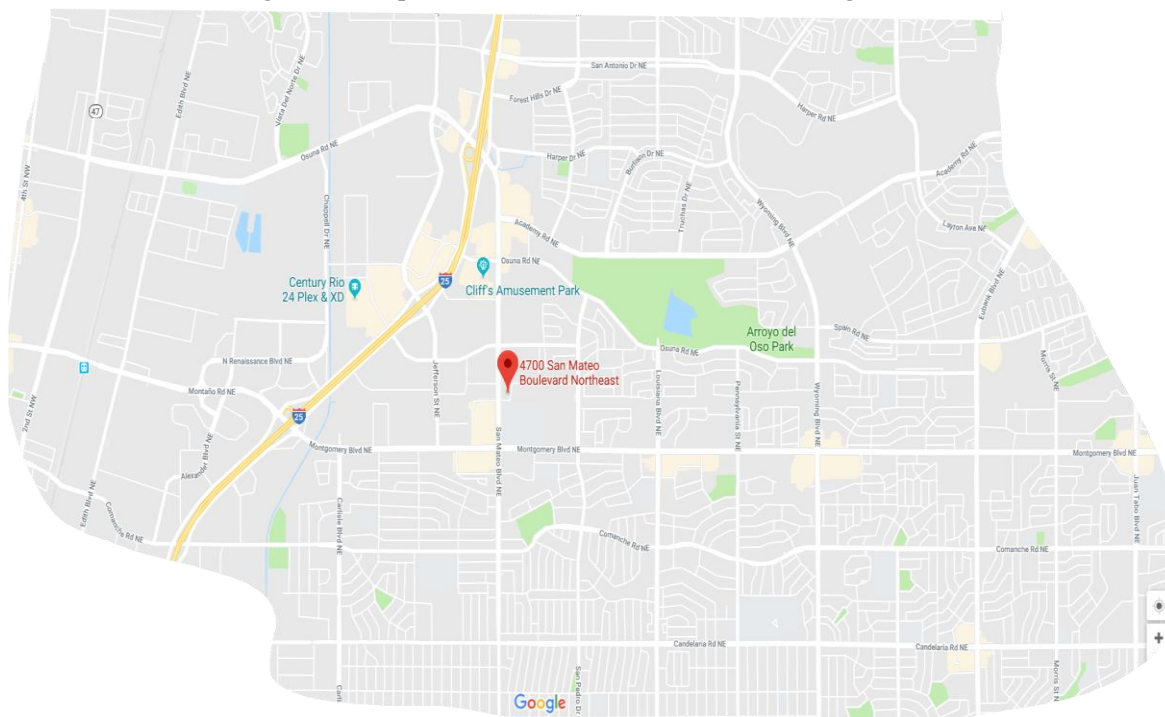
The following section contains tables which provide a more detailed description of the network configuration and lists monitoring equipment operated at each site. For each monitoring location, Tables 1-7 list the site's longitude and latitude, pollutants measured, monitor type(s) and their associated parameters, sampling method(s), operating schedule, monitoring objective, spatial scale, whether the data is NAAQS comparable, the MSA, and any proposed changes to the network.

Del Norte (2ZM - NCore) - 35-001-0023 - 4700A San Mateo, NE, Albuquerque, NM 87109

The Del Norte site serves as the NCore site in the AQP ambient air monitoring network. NCore is a multi-pollutant network that integrates several advanced measurement monitoring systems for particulate, pollutant gases, and meteorology. The NCore site measures the following parameters:

Parameter	Comments
PM _{2.5} speciation	Organic and elemental carbon, major ions and trace metals (24-hour average; every 3rd day); CSN
PM _{2.5} FRM mass	24 hr. average at least every day
Continuous PM _{2.5} mass	1-hour reporting interval; Federal Equivalent Method (FEM) or pre-FEM monitors
PM _(10-2.5) mass	Filter-based or continuous
ozone (O ₃)	all gases through continuous monitors
carbon monoxide (CO)	capable of trace levels (low ppm and below) where needed
sulfur dioxide (SO ₂)	capable of trace levels (low ppb and below) where needed
nitrogen oxide (NO)	capable of trace levels (low ppb and below) where needed
total reactive nitrogen (NO _y)	capable of trace levels (low ppb and below) where needed
surface meteorology	wind speed and direction, temperature, relative humidity (RH)

Figure 2 – Map of Del Norte Ambient Air Monitoring Station



In Table 1, which follows, the details of the Del Norte site monitoring equipment are described.

Table 1 – Del Norte Monitoring Parameters

Del Norte (2ZM - NCore) - 35-001-0023 - 4700A San Mateo, NE, Albuquerque, NM 87109												
Latitude	Longitude	Pollutants Measured	Monitor Type	Parameter	Sampling Method	AQS Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA	Change
-106.586	-35.13426	O ₃	SLAMS	44201	87	Ultraviolet Absorption	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		HS CO	SLAMS	42101	593	Gas Filter Correlation	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		NO ₂	SLAMS	42602	99	Gas Phase Chemiluminescence	Continuous	Population Exposure	Neighborhood	Yes	ABQ	The Thermo 42iQTL will replace the Teledyne T200 unit
		NO _y	SLAMS	42600	699	Chemiluminescence	Continuous	Population Exposure	Neighborhood	Yes	ABQ	Thermo 42iY will replace Teledyne T200U unit
		HS SO ₂	SLAMS	42401	600	UV Fluorescence	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{2.5}	SLAMS	88101	221	Gravimetric	1 in 1	Population Exposure	Neighborhood	Yes	ABQ	
		Metals	Special Purpose	Multiple 88132- 88306, 88403	Multiple	810-MetOne SASS, 811 MetOne SASS Teflon, 812 MetOne SASS Nylon	1 in 3	Population Exposure	Mixture of Other, Population Exposure, General Background	N/A	ABQ	
		Carbon Speciation	Special Purpose	Multiple 88320- 88388	Multiple	826, 831, 839, 840, 841, 842 URG 3000N with Pall Quartz Filter and cyclone inlet	1 in 3	Population Exposure	Mixture of Other, Population Exposure, General Background	N/A	ABQ	
		PM ₁₀	SLAMS	81102	239	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{2.5}	SLAMS	88101	545	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{10-2.5}	SLAMS	86101	236	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	N/A	ABQ	

Foothills (2ZF) - 35-001-1012 - 8901 Lowell NE, Albuquerque, NM 87122

Figure 2 – Map of Foothills Ambient Air Monitoring Station



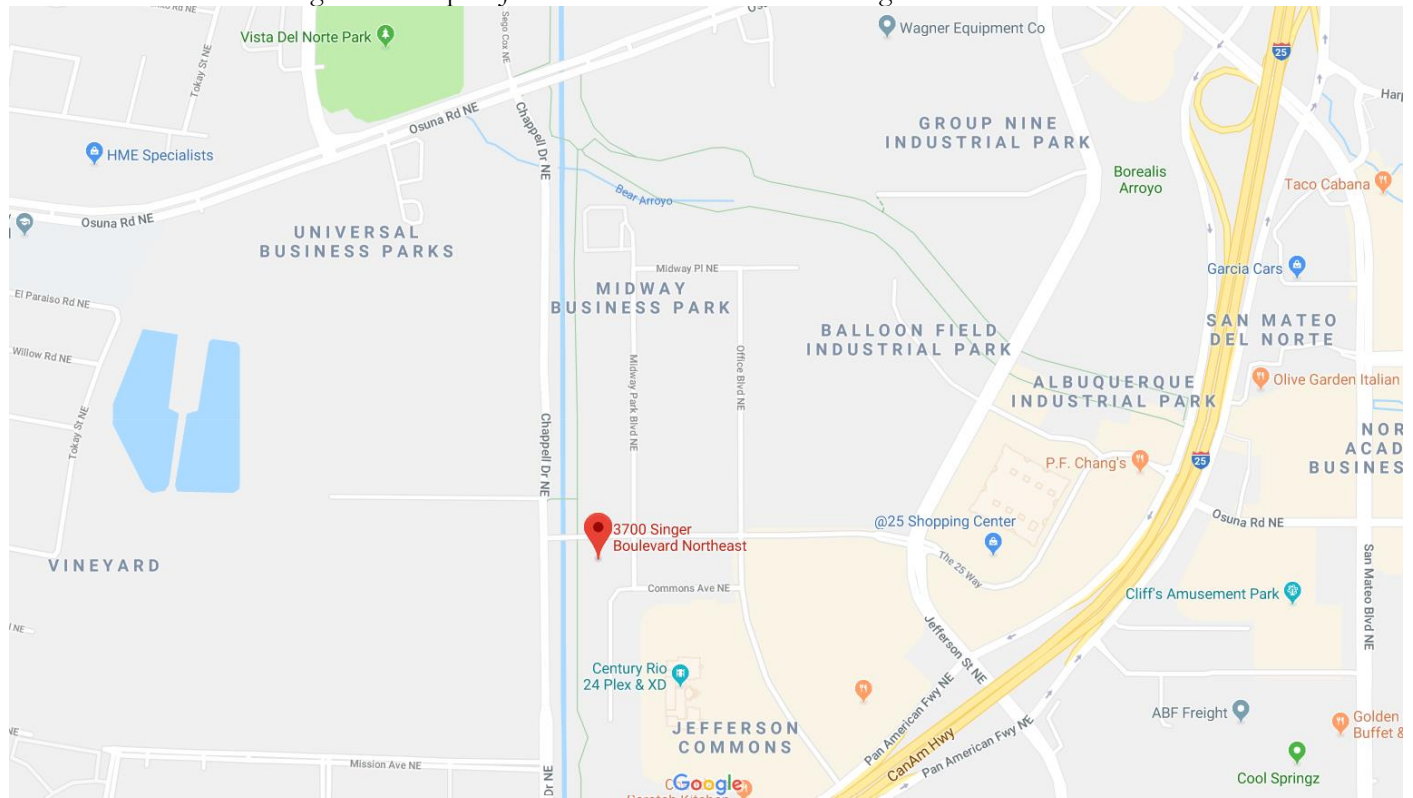
The Foothills ambient air monitoring station monitors ozone and measures PM_{10} , $PM_{2.5}$ and $PM_{10-2.5}$. There is a full suite of meteorological equipment that measures wind speed, wind direction, temperature, and solar radiation. In Table 2, which follows, the details of the Foothills site monitoring equipment are described.

Table 2 – Foothills Monitoring Parameters

Foothills (ZZF) - 35-001-1012 - 8901 Lowell NE, Albuquerque, NM 87122												
Latitude	Longitude	Pollutants Measured	Monitor Type	Parameter	Sampling Method	AQS Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA	Change
-106.508	35.1852	O ₃	SLAMS	44201	87	Ultraviolet Absorption	Continuous	Higher Concentration	Urban	Yes	ABQ	
		PM ₁₀	SLAMS	81102	239	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{2.5}	SLAMS	88101	238	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{10-2.5}	SLAMS	86101	240	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	N/A	ABQ	

Jefferson (2ZS) - 35-001-0026 - 3700 Singer NE, Albuquerque, NM 87109

Figure 3 – Map of Jefferson Ambient Air Monitoring Station



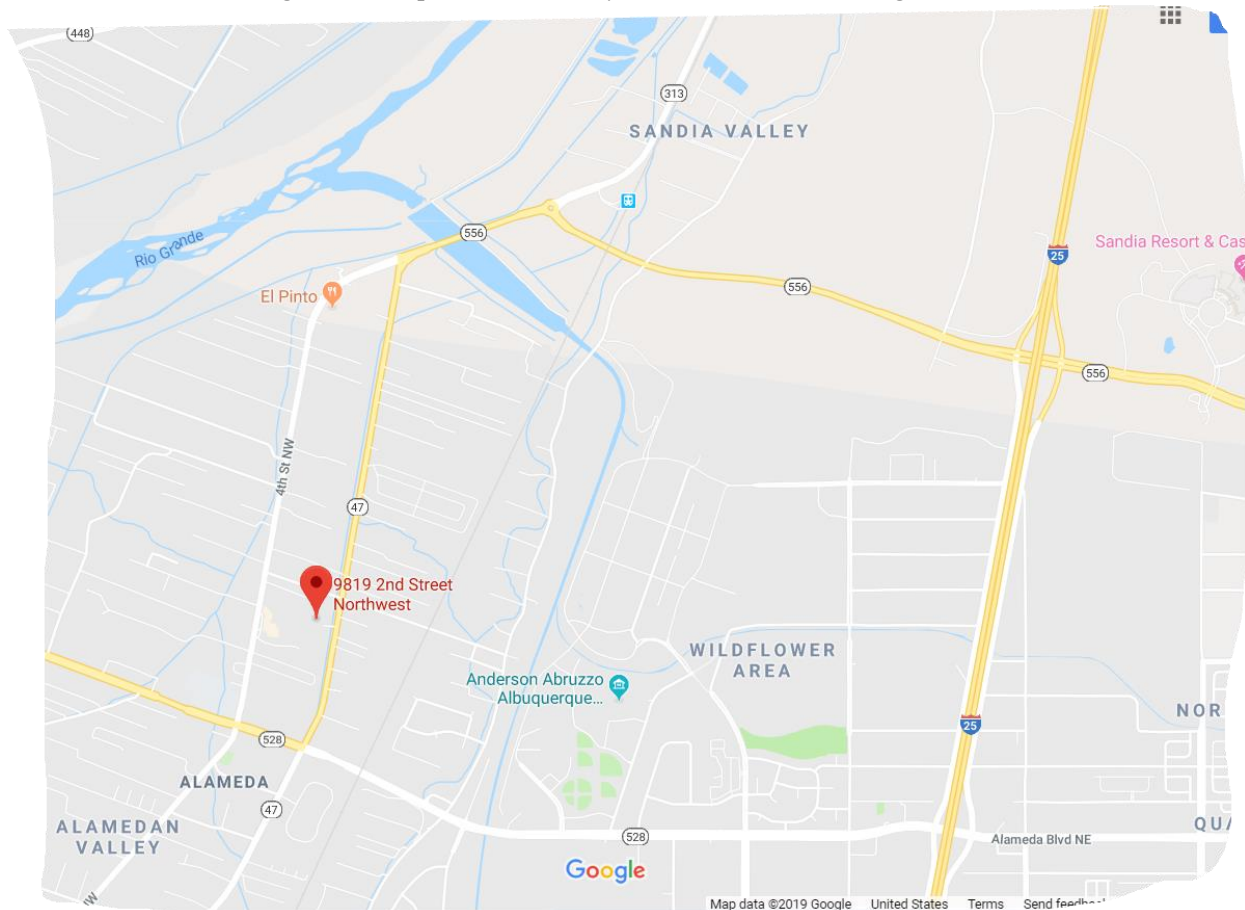
The Jefferson ambient air monitoring station measures PM_{10} , $PM_{2.5}$ and $PM_{10-2.5}$. There is a full suite of meteorological equipment that measures wind speed, wind direction, temperature, and solar radiation. In Table 3, which follows, the details of the Jefferson site monitoring equipment are described.

Table 3 – Jefferson Monitoring Parameters

Jefferson (2ZS) - 35-001-0026 - 3700 Singer NE, Albuquerque, NM 87109												
Latitude	Longitude	Pollutants Measured	Monitor Type	Parameter	Sampling Method	AQS Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA	Change
-106.605	-35.1443	PM ₁₀	SLAMS	88102	239	Broadband Spectroscopy	Continuous	Highest Concentration	Neighborhood	Yes	ABQ	
		PM _{2.5}	SLAMS	88101	238	Broadband Spectroscopy	Continuous	Source Oriented	Neighborhood	Yes	ABQ	
		PM _{10-2.5}	SLAMS	86101	240	Broadband Spectroscopy	Continuous	Source Oriented	Neighborhood	N/A	ABQ	

North Valley (2ZH) - 35-001-1013 - 9819A Second Street, NW, Albuquerque, NM 87114

Figure 4 – Map of North Valley Ambient Air Monitoring Station



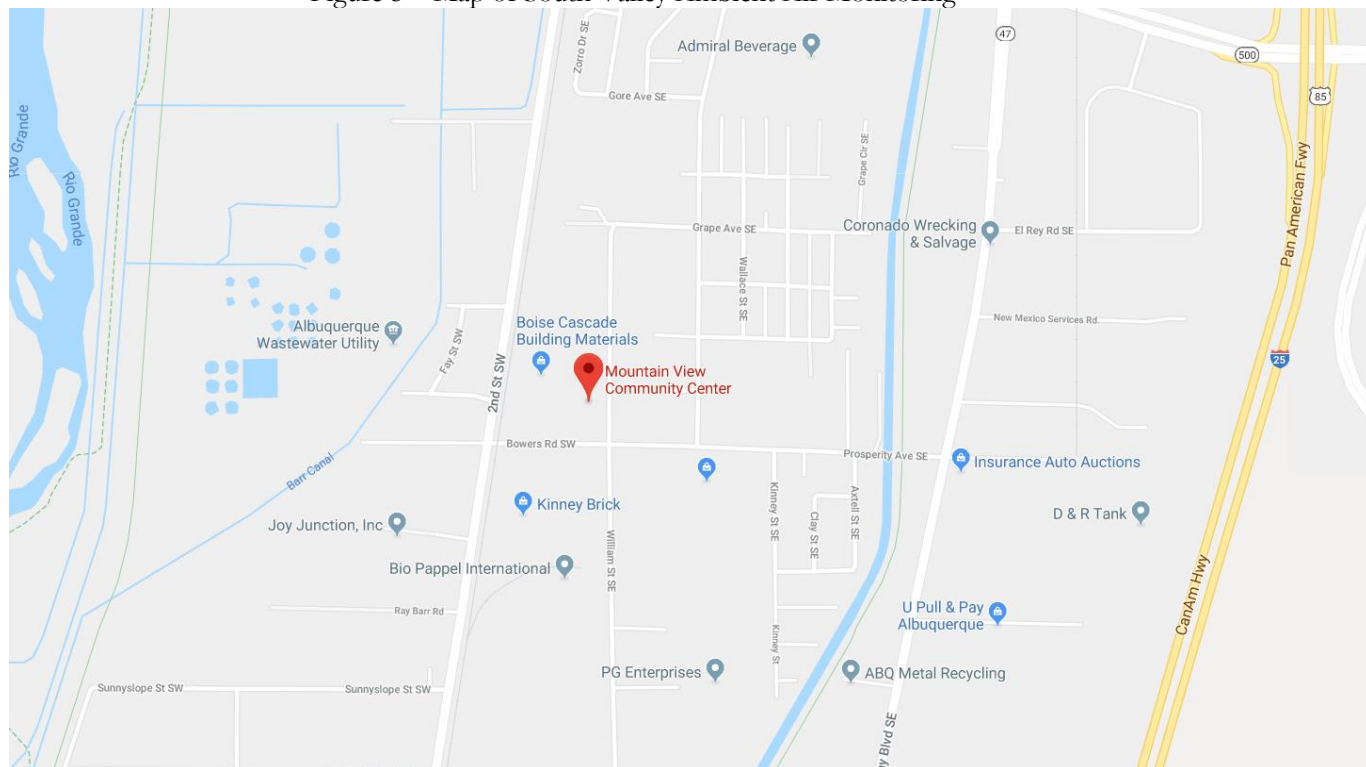
The North Valley ambient air monitoring station measures PM_{10} , $PM_{2.5}$ and $PM_{10-2.5}$. There is a full suite of meteorological equipment that measures wind speed, wind direction, temperature, and solar radiation. In Table 4, which follows, the details of the North Valley site monitoring equipment are described.

Table 4 – North Valley Monitoring Parameters

North Valley (2ZH) - 35-001-1013 - 9819A Second Street, NW, Albuquerque, NM 87114												
Latitude	Longitude	Pollutants Measured	Monitor Type	Parameter	Sampling Method	AQS Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA	Change
-106.614	-35.19324	PM ₁₀	SLAMS	81102	239	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{2.5}	SLAMS	88101	545	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{10-2.5}	SLAMS	86101	236	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	No	ABQ	

South Valley (2ZV) - 35-001-0029 - 201 Prosperity NE, Albuquerque, NM 87105

Figure 5 – Map of South Valley Ambient Air Monitoring



The South Valley ambient air monitoring station monitors for ozone, carbon monoxide, and oxides of nitrogen and measures PM_{10} , $PM_{2.5}$ and $PM_{10-2.5}$. There is a full suite of meteorological equipment that measures wind speed, wind direction, temperature, and solar radiation. In Table 5, which follows, the details of the South Valley site monitoring equipment are described.

Table 5 – South Valley Monitoring Parameters**South Valley (2ZV) - 35-001-0029 - 201 Prosperity NE, Albuquerque, NM 87105**

Latitude	Longitude	Pollutants Measured	Monitor Type	Parameter	Sampling Method	AQS Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA	Change
-106.605	-35.1443	PM ₁₀	SLAMS	81102	239	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{2.5}	SLAMS	88101	238	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{10-2.5}	SLAMS	86101	240	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	N/A	ABQ	
		PM _{2.5}	SLAMS	88101	235	Gravimetric	1 in 1	Population Exposure	Neighborhood	Yes	ABQ	
		NO ₂	SLAMS	42602	99	Gas Phase Chemiluminescence	Continuous	Population Exposure	Neighborhood	Yes	ABQ	Thermo 42iQTL will replace the Teledyne T200 unit
		NO _y	SLAMS	42600	699	Chemiluminescence	Continuous	Population Exposure	Neighborhood	Yes	ABQ	Thermo 42iY will replace the Teledyne T200U unit
		O ₃	SLAMS	44201	87	Ultraviolet Absorption	Continuous	Regional Transport	Regional	Yes	ABQ	
		HS CO	SLAMS	42101	93	Gas Filter Correlation	Continuous	Regional Transport	Regional	Yes	ABQ	

DISCUSSION OF INDIVIDUAL CRITERIA POLLUTANTS

The discussion below details:

- The criteria pollutants monitored at each ambient air monitoring station
- A comparison of the concentration of each pollutant to the NAAQS
- Explains why the AQP monitoring network meets the criteria for assessment of the concentration for each pollutant in its jurisdiction

Ground Level Ozone (O₃):

Based on population, Table D-2 of Appendix D to Part 58, 40 CFR requires a minimum of two (2) SLAMS ozone monitors.

Current – Per 40 CFR Part 58, Appendix D Section 4.1, the AQP exceeds EPA network design requirements for ambient air quality monitoring for ozone. The AQP has three (3) ozone monitors, all categorized as SLAMS.

Table 6: Ozone Design Value by site, part per million (ppm)

Site Name AQS #	2018 4th highest 8-hr avg.	2019 4th highest 8-hr avg.	2020 4th highest 8-hr avg.	3-year Design Value
Del Norte 0023	0.075	0.068	0.068	0.070
Foothills 1012	0.073	0.069	0.071	0.071
South Valley 0029	0.069	0.066	0.066	0.067

Table 7: Ozone Design Value, parts per million (ppm)

Site	2018 4 th Highest 8- hr (ppm)	2019 4 th Highest 8- hr (ppm)	2020 4 th Highest 8- hr (ppm)	3-year Design Value part per million (ppm)	2015 Federal Standard part per million (ppm)	% of the 2015 Federal Standard
Foothills* 1012	0.073	0.069	0.071	0.071	0.070	101%

*Foothills monitoring station recorded the highest concentrations from CY 2017-2019.

AQP considers the three ozone monitoring locations appropriate for its jurisdiction. AQP monitoring results show that the location of the maximum concentration of ozone changes over the year. Overall, the Foothills site averages higher concentrations than the other two sites, but it is important to understand the variability during the year. The AQP meets EPA requirements for ozone monitoring.

Future: No changes are proposed to the ozone network.

Fine Particulate Matter (PM_{2.5}):

According to 40 CFR Part 58, Table D-5 of Appendix D, one SLAMS PM_{2.5} site is required in Albuquerque-Bernalillo County. However, two monitors are needed to meet collocation requirements. The NCore site requires a PM_{2.5} monitor and there is a PM_{2.5} monitor at the highest PM_{2.5} concentration site. This highest concentration site fulfills the requirement stated in 40 CFR Part 58 Appendix D, 4.7.1 (b).

Current – AQP operates seven PM_{2.5} monitors at five monitoring stations in Albuquerque-Bernalillo County. The PM monitors (Teledyne/API T640X) that operate in the City’s ambient monitoring network measure three parameters: PM_{2.5}, PM₁₀, and PM_{10-2.5}.

- The Del Norte 2ZM site (AQS 35-001-0023) operates a continuous Teledyne/API T640X FEM monitor as the Primary monitor and a MetOne E-FRM sequential sampler with 2.5-micron inlet cutoff to record 24-hour averages PM_{2.5} on a 1 in 1 schedule.
- The South Valley 2ZV site (AQS 35-001-0029) operates a Teledyne/API T640X FEM monitor and MetOne E-FRM sequential sampler with a 2.5-micron inlet to record 24-hour averages with a sampling frequency of 1/1 schedule as a co-located sampler.
- The Foothills 2ZF site (AQS 35-001-1012) operates a continuous Teledyne/API T640X FEM sampler. This monitor is not required by EPA, but is maintained by the AQP to better understand PM_{2.5} trends as prevailing westerly winds cross the City of Albuquerque.
- The Jefferson 2ZS site (AQS 35-001-0026) operates a continuous Teledyne/API T640X FEM monitor, which is not required by EPA, but the data is reported to AQS.
- The North Valley 2ZH site (AQS 35-001-1013) operates a continuous Teledyne/ API T640X FEM monitor, which is not required by EPA, but the data is reported to AQS.

Table 8: 2020 PM_{2.5} Design Value, microgram per cubic meter (ug/m³)

Site Name AQS #	Sampling Schedule	24-hour design value (ug/m ³)	Annual Design Value (ug/m ³)	Design Value (% Daily NAAQS)	Design Value (% Annual NAAQS)	Collocated with sequential PM _{2.5}
Del Norte 0023	Continuous	16	5.8	45.7%	48.3%	No
South Valley 0029	Continuous	22	8.4	62.9%	70%	Yes

The PM_{2.5} annual design values for the Foothills, Jefferson, and North Valley sites are not included in Table 10, as three years of data is required to calculate the design value. When we have three years of data for these sites, we will include the values in the calculation of the design value and will report the values in the ANR.

Future –No changes are proposed to the PM_{2.5} network.

PM₁₀:

PM data is used by the AQP to accurately measure PM in neighborhoods, to enforce our local fugitive dust control regulation, and to issue high wind advisory and health alerts.

Current – AQP currently operates three PM₁₀ monitors at three sites, which are all NAAQS comparable. The Del Norte 2ZM NCore site (AQS 35-001-0023), Jefferson site (35-001-0026), and South Valley site (35-001-0029).

- The Del Norte 2ZM site (AQS 35-001-0023) operates a Teledyne/API T640X continuous FEM for PM₁₀.
- The Jefferson 2ZS site (AQS 35-001-0026) operates a Teledyne/ API T640X continuous FEM for PM₁₀.
- The South Valley 2ZV site (AQS 35-001-0029) operates a Teledyne/API T640X continuous FEM for PM₁₀.

- The Foothills 2ZF site (AQS 35-001-1012) operates a continuous Teledyne/API T640X FEM sampler. This monitor is not required by EPA, but is maintained by the AQP to better understand PM₁₀ trends as prevailing westerly winds cross the City of Albuquerque and for AQI purposes.
- The North Valley 2ZH site (AQS 35-001-1013) operates a continuous Teledyne/API T640X FEM monitor. This monitor is not required by EPA, but is maintained by the AQP to better understand PM₁₀ trends as prevailing westerly winds cross the Albuquerque-Bernalillo County and for AQI purposes.

Table 9 shows the calculation of the design values for each NAAQS comparable PM₁₀ site.

Table 9: 2020 PM₁₀ 24 Hour Design Value

	Site	COA-2019 24 Hour Design Value	NAAQS	Is the average # of exceedance values >1?
	Del Norte 2ZM	0	≥1	No
	Jefferson 2ZS	0	≥1	No
	South Valley 2ZV	0	≥1	No

*PM₁₀ Design Value is the number of expected exceedances based off the last three years values.

The PM₁₀ annual design values for the Foothills and North Valley sites are not listed in Table 9, as three years of data is required to calculate the design value. When we collect three years of data, the data will be included in the calculation of the design value and will be reported in the ANR. Under 40 CFR 50.6(a) the 24-hour primary and secondary standards are attained when the expected number of exceedances per year at each monitoring site is less than or equal to one. In the simplest case, the number of expected exceedances at a site is determined by recording the number of exceedances in each calendar year and then averaging them over the past three calendar years. The expected number of exceedances is then estimated by averaging the individual annual estimates for the past three years. The comparison with the allowable expected exceedance rate of one per year is made in terms of a number rounded to the nearest tenth (fractional values equal to or greater than 0.05 are to be rounded up; e.g., an exceedance rate of 1.05 would be rounded to 1.1, which is the lowest rate for nonattainment).

The AQP is meeting the monitoring network requirements for ambient air quality monitoring for PM₁₀ as required by 40 CFR Part 58, App. D, § 4.4.

Future: No changes are proposed to the PM₁₀ network.

Sulfur Dioxide (SO₂):

Current – AQP operates an SO₂ monitor at site Del Norte 2ZM site (AQS 35-001-0023, the NCore location). Table 10 shows that the SO₂ monitor is measuring only trace levels, less than 10% of the NAAQS.

Table 10: 2020 SO₂ Design Value, part per billion (ppb)

2ZM Del Norte	Year	99th percentile
35-001-0023	2018	5
35-001-0023	2019	4
35-001-0023	2020	3
Design Value		4

Future –No changes are proposed to the SO₂ network in the coming year.

SO₂ Data Requirement Rule- The EPA Fact Sheet “Final Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO₂) Primary National Air Quality Standards (NAAQS) states:

This final rule establishes that, at a minimum, air agencies must characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO₂. An air agency may avoid the requirement for air quality characterization near a source by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO₂.

Bernalillo County does not have any sources that emit over the 2,000 tons per year minimum therefore, no characterization is necessary. The AQP will continue to follow this issue and adjust our plans as further information becomes available from the EPA.

The AQP is meeting the network design requirements for ambient air quality monitoring for SO₂ required by 40 CFR Part 58, App. D, § 4.4.

Oxides of Nitrogen (NO):

Current – The AQP monitors NO, NO₂, NO_x, and NO_y at the Del Norte 2ZM site (AQS 35-001-0023, the NCore location) and is currently meeting the network design requirement for ambient air quality monitoring for NO₂ based on 40 CFR Part 58, Appendix D Section 4.3.3. Table 13 details the design values for NO₂ for 2017 and 2018. (Annual 98th percentile 1-hour values averaged over 3 years = 45 ppb compared to a standard of 100.)

Table 11: NO₂ Design Value, ppb

2ZM Del Norte site 35-001-0023			
	2019	2020	3-year Design Value
98th Percentile			
1-Hr Concentration (PPB)	43.8	40.6	43

The NO₂ annual design values for the South Valley site is not included in Table 11, as three years of data is required to calculate the design value. We have three years of data in 2021, we will include the South Valley values in the 2022 ANR.

Future – The AQP proposes to replace the API 200 and API 200U with the Thermo 42iQTL and the 42iY at the Del Norte (35-001-0023) and South Valley (35-001-0029) monitoring sites.

Carbon Monoxide (CO):

Current –The AQP currently operates two CO monitors. The COA is currently meeting the network design requirement for ambient air quality monitoring for CO per 40 CFR Part 58, Appendix D Section 4.2.

Table 12: 2020 CO Design Value, ppm

2ZM Del Norte 35-001-0023						
1 Hour				8 Hour		
Year	1st Max	2nd Max		Year	1st Max	2nd Max
2019	1.4	1.3		2019	1.4	1.3
2020	1.4	1.3		2020	0.9	0.9
2ZV South Valley 35-001-0029						
1 Hour				8 Hour		
Year	1st Max	2nd Max		Year	1st Max	2nd Max
2019	1.1	1		2019	1.1	0.8
2020	4	3.7		2020	1.1	0.9

<u>Site</u>	<u>2020 -1-hr high average (ppm)</u>	<u>Federal Standard part per million (ppm)</u>	<u>% of t Federal Standard</u>
<u>South Valley (35-001-0029)</u>	<u>4.0</u>	<u>35.0</u>	<u>11.4%</u>
<u>Site</u>	<u>2020 -8-hr high average (ppm)</u>	<u>Federal Standard part per million (ppm)</u>	<u>% of Federal Standard</u>
<u>Del Norte (35-001-0023)</u>	<u>1.4</u>	<u>9.0</u>	<u>15.5%</u>

Since the CO concentrations are low, both monitors are now 'high sensitivity'.

Future –No changes are proposed for the coming year.

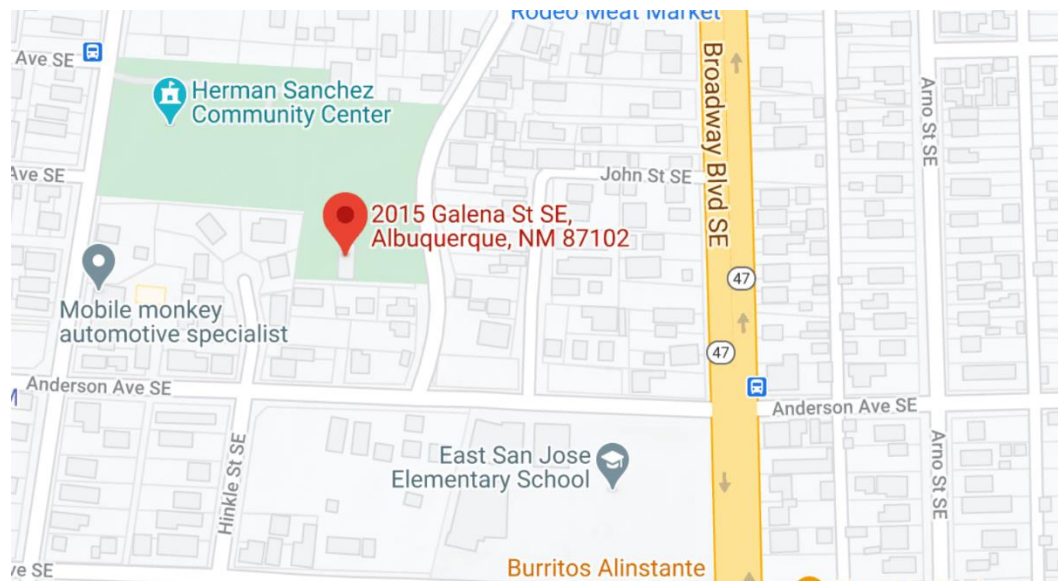
PM_{2.5} Chemical Speciation

Current – 40 CFR Part 58, Section 4.7.4 requires the operation of a speciation sampler at approved NCore sites. The Del Norte 2ZM site (AQS 35-001-0023) site in Albuquerque operates a Met One Super Sass and a URG sampler for EC/OC (Elemental and Organic Carbon). Speciation filters are shipped to the EPA national analysis contractor, and the contractor reports the data to AQS. The AQP also uses this data in local studies to correlate with data from other samplers.

Both samplers now operate on one-in-three-day sampling schedule.

Community Scale Air Toxics Monitoring (CSATM)

Current – The AQP has participated previously in CSATM studies, but there were none in the past year. On May 1, 2020, the AQP applied for a 2020 CSATM grant. The COA was not awarded a grant.

Proposed New Site:**Figure 7 – Map of San Jose Mobile Ambient Air Monitoring Station**

The AQP proposes a mobile monitoring site in the San Jose Neighborhood that will operate an Auto GCMS unit for the measurement of several air toxic pollutants and a suite of criteria pollutant monitors. Due to several environmental justice concerns brought to the attention of the AQP, we would like to assist the community by providing air toxic related data.

Table 6 – San Jose Monitoring Parameters

San Jose (ZZJ) - 2015 Galena Street SE Albuquerque, NM 87102												
Latitude	Longitude	Pollutants Measured	Monitor Type	Parameter	Sampling Method	AQS Analysis	Operating Schedule	Monitoring Objective	Spatial Scale	NAAQS Comparable	MSA	Change
-106.64795	35.063623	PM ₁₀	SLAMS	81102	239	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{2.5}	SLAMS	88101	545	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		PM _{10-2.5}	SLAMS	86101	236	Broadband Spectroscopy	Continuous	Population Exposure	Neighborhood	N/A	ABQ	
		HS CO	SLAMS	42101	93	Gas Filter Correlation	Continuous	Regional Transport	Regional	Yes	ABQ	
		NO ₂	SLAMS	42602	256	Cavity Attenuated Phase Shift (CAPS)	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		HS SO ₂	SLAMS	42401	600	UV Fluorescence	Continuous	Population Exposure	Neighborhood	Yes	ABQ	
		O ₃	SLAMS	44201	87	Ultraviolet Absorption	Continuous	Regional Transport	Regional	Yes	ABQ	
		Total Carbon Analyzer	SLAMS	N/A	N/A	Gravimetric	Continuous	Population Exposure	Neighborhood	No	ABQ	
		Auto GCMS	SLAMS	N/A	N/A	Gas Chromatography	Continuous	Population Exposure	Neighborhood	No	ABQ	